

result of a coccoid stage than produced by true sporangia. The appearance of *P. crepidinum* is much that of a *Dermocarpa*, but the true vegetative cell divisions place it in *Pleurocapsa*.

It occurred sparingly in a coating composed of several minute algae, on the woodwork of an old wharf, at Otter Creek, Mount Desert, Maine, July 17, 1900.

*Protoderma marinum* was included in the Preliminary List published in RHODORA, Vol. II, p.45; *Ectocarpus fasciculatus* var. *abbreviatus*, *Isactis centrifuga*, *Elachista Chondri*, and *Actinococcus aggregatus* were issued in the Phycotheca Boreali-Americana, Nos. 731, 757, 773 and 786, respectively; *Melobesia Corallinae* will appear in a later fascicle.

## NOTES ON HYBRIDS OF QUERCUS ILICIFOLIA.

ALFRED REHDER.

WHILE botanizing last year about the middle of September in the Blue Hill Reservation and following the path which leads from Blue Hill Avenue to the top of the hill, I directed my attention to the varying shapes of the foliage of the Oaks. *Quercus rubra*, *coccinea*, *velutina*, *alba*, *ilicifolia* and *prinoides* are common there, with the exception of the last named species, and form, in fact, the chief components of the second growth which clothes the hill. The top is almost exclusively covered by the low growth of *Quercus ilicifolia*, hardly exceeding 5 ft. in height. As I reached this region and was passing the last higher bushes of *Quercus coccinea* and some other trees, my attention was attracted by a small tree bearing foliage similar in shape to that of *Quercus ilicifolia* but differing in habit and greater height from this species. The leaves, too, although they had almost the outline of those of *Quercus ilicifolia* showed a marked difference in the tomentum of the lower surface, which was only slightly tomentose or almost glabrous in most of the leaves. These characters led me at once to the conclusion that I had stumbled on a hybrid of *Quercus ilicifolia* with a species of the *Q. rubra* group and I naturally suspected first *Q. coccinea*, which grew plentifully around it, to be the other parent. A closer examination,



however, did not verify this opinion since the cup scales and the winter buds were more tomentose than in either of the suspected parents and make more probable the parentage of *Q. velutina*, though the smallness of the foliage and winter buds points more toward *Q. coccinea*. The shape of the few-lobed leaves seems to exclude *Quercus rubra*, as also the smallness of the acorns which are almost indistinguishable from those of *Q. ilicifolia* save for the somewhat deeper cups and the more tomentose scales. It is therefore not without hesitation that I pronounce the Oak in question a hybrid of *Q. ilicifolia* and *velutina* but it seems to me the most probable explanation of this peculiar form.

I noticed only two small trees of this hybrid standing close together on the left side of the path not far from the top and a little below the last larger *Pinus rigida*. The trees, of which the larger is about 15 ft. high with a girth of 7 inches at the height of 5 ft. where the first branches appear and the smaller about 12 ft. high, seem to spring from a common root and are probably second growth from a decayed stump. The main branches diverge at a more acute angle and are less crooked than in *Q. ilicifolia*.

QUERCUS ILICIFOLIA Wengenb. (*Q. nana* Sarg.) × VELUTINA Lam. Small tree with spreading branches; branchlets dull yellowish or reddish brown, tomentulose when young: winter buds globose-ovate, obtuse, 1-1½ lines long, covered with dense yellowish gray tomentum: leaves 1½-4 inches long, rounded or cuneate at the base, pinnately lobed with 2-3 pairs of spreading lobes and with the sinuses reaching almost half way to the middle, lower lobes broadly triangular-ovate, entire, middle lobes triangular ovate or sometimes oblong-ovate with 1-3 small bristle-like teeth, upper lobes short and entire, small close to the apex and separated from the middle lobes by wide and very shallow sinuses, upper surface dull dark green, lower one paler and covered at maturity with a thin floccose grayish tomentum which often almost disappears at length except in the axils of the veins and along the midrib: acorns short-stalked; cup top-shaped contracted at the base into a short thick scaly stalk; the scales densely covered with a fine yellowish gray tomentum; nut globose-ovoid, about 6 lines long, slightly striate, tomentulose.

Specimens are preserved in the herbarium of the Arnold Arboretum, in the Gray Herbarium and in my own private herbarium.

The accompanying plate kindly prepared by Mr. C. E. Faxon will serve to give a clearer idea of the exact shape of the foliage than a description possibly can. Leaves of the two other hybrid forms of *Q. ilicifolia* mentioned below are shown on the same plate for comparison.



An Oak supposed to be of the same parentage as the above described hybrid has been reported from Ocean Grove, N. J., by J. K. Haywood (see Sargent, *Silva N. Am.* 8, p. 156).

Specimens of this form are preserved in the herbarium of the Arnold Arboretum, but as no fruits have been collected, it seems inadvisable to venture any definite opinion about it. The leaves differ from the hybrid described above chiefly by their larger size; they are 4–7 in. long, besides they are less deeply lobed with broader and shorter entire lobes, the winter buds are larger and more pointed and the young branches more glabrous.

Another interesting hybrid of *Quercus ilicifolia* was found about 45 years ago in Northbridge, Mass., by Dr. J. W. Robbins of Uxbridge, Mass. It is mentioned by A. Gray in *Man. Bot.* Ed. 5, p. 454 (1867) as a hybrid of *Q. ilicifolia* and *coccinea*. By Dr. Robbins it was designated as *Q. palustris* × *ilicifolia*, but this is not probable since *Q. palustris* does not grow in this region. He gives in a note accompanying his specimens, which are preserved in the Gray Herbarium, the following account of the tree itself and the locality where he found it. Perhaps it may help to ascertain whether the tree is still existing.

“*Q. palustris* × *ilicifolia* Robbins. Flowers gathered on the 20th of May, 1866, from a tree 40° high and 19' in circ. 7° from the base; hybrid in all probability from the species indicated; the former of which a tree 2° in diam. stands at a distance of but 4 rods and the other a shrub beneath it and elsewhere in the vicinity. The tree overhangs the old road to Uxbridge about the middle of a small wood, half a mile southwest of Whitinsville in Northbridge, Mass. The frost color of the leaves is intermediate between the red of one and the dull brown of the other. The ripe acorns are mostly striate. I first noticed the tree as peculiar about 1855.”

QUERCUS COCCINEA × ILICIFOLIA (A Gray *Man. Bot.* ed. 5, p. 454 (1867). — Engelmann, *Trans. St. Louis Acad.* 3: 542 (1876). — Sargent, *Silva N. Am.* 8: 156 (1895) is very similar to the hybrid from Blue Hill. The young branches remain tomentulose until autumn: winter buds ovate, about 2 lines long; scales ciliate and yellowish appressed-pubescent chiefly in the middle: leaves 3½–5½ in. long, in shape almost like those of the hybrid from Blue Hill, but the middle lobes narrower and longer, the sinuses deeper and the texture somewhat thinner, usually rounded at the base; petioles about 1 in. long: acorns very short-stalked; cup almost hemis-



spherical contrasted at the base into a short scaly stalk; scales appressed-pubescent, but glabrous at the margin and apex; nut oval, 6-7 lines long, striate, glabrous.

ARNOLD ARBORETUM.

EXPLANATION OF PLATE 24. — *Quercus ilicifolia* × *velutina* from Blue Hill: fig. 1, fruiting branch; *Q. ilicifolia* × *velutina* from Ocean Grove: fig. 2, leaf; *Q. coccinea* × *ilicifolia*: fig. 3, acorn; fig. 4, leaf. All figs. one half natural size.

## TWO MUSHROOM BOOKS.

To amateurs of mushrooms, who have found the literature of the subject at times hopeless and dreary, a little volume<sup>1</sup> recently published in Philadelphia should bring recreation and entertainment. Inspired to see, with Emerson, that "a poor fungus or mushroom . . . is the symbol of the power of kindness," the authors of the modest volume were led by the difficulties that beset the path to knowledge to think of the trials and distress of others that might follow in their footsteps. How could they help them? "This little book is the answer." "Let us give our own experience," they said, and they have told it in language as simple as it is diverting.

To review the book seriously would be cruel. It is not meant to be reviewed, but to be read and enjoyed, in the spirit in which the authors carried on their studies. By quotation, however, the true value of the book to the weary student can, perhaps, be indicated. "We began for pleasure and recreation, but it became irksome and fatiguing, and the subject which might have amused us . . . is put aside and abandoned."

The introduction transports us from "the bustling, noisy streets of a city into the quiet fields and woods, where the bright-hued mushrooms" invite us to "the discovery of new specimens, the learning of their names, the knowledge of their curious organizations" which "will all add an interest to our lives." "Among the fallen leaves — peers out a bright yellow mushroom." We dig it up. "We have brought a basket and trowel and can examine them thoroughly."

<sup>1</sup> Among the Mushrooms. A Guide for Beginners. Emma L. Dallas and Caroline A. Burgin, Philadelphia, 1900; Drexel Biddle, Publisher. pp. 175, \$2.00.